Estimates of Cost & Return

The Asheville Greenways program will be a new initiative that requires a fresh look at how local dollars are spent to fulfill community-wide land use objectives. The costs of developing greenways must be weighed against the costs and impacts of inappropriate land use development. For example, the best use of the floodplain is for the storage of flood water. Greenways provide an economically viable use of the same land, expanding the functional use of the property. Greenways as a functional land use can lower short and long term community costs and provide financial return on money the community invests in infrastructure, transportation, recreation and education.

The following text defines typical costs for on and off-road greenway facility development and management. These are represented by general unit costs for facility development (not including land acquisition costs) as well as dollar amounts that communities across the state are spending on their greenway program development and management/ maintenance/operations. Cost estimates are followed by examples of how other communities are receiving a return on their investment in greenways in terms of reduced flooding costs, reduced costs of water quality improvement, increased tourism revenue and increased business attraction.

Greenway Facility Development Costs

Costs do not include land acquisition costs. Labor costs are included in facility estimates. Costs for engineering and design development are estimated at 10-15% of construction costs. Costs for facility development are averages and will vary according to site specific factors (for example, an asphalt trail could cost between $120,000 and $1 million per mile).

Greenways with No Facility Development (Level 1):

Vegetation	Unit Cost
Trees	$750 each
Shrubs	$60 each

Streambank Stabilization (Bioengineering) $25-55 per linear foot ($40-45 per linear foot average)

Greenways with Limited Facility Development (Level 2):

Trail Treads

6-foot Bare Earth Hiking/Mtn. Bike Trail	$40,000 per mile
8-foot Bare Earth Equestrian Trail	$50,000 per mile
8-foot Woodchip Pedestrian Trail	$65,000 per mile
12-foot Wood Deck/Boardwalk Trail	$1,800,000 per mile

Signage

Information Signs	$1,000.00 each
Direction Signs	$200.00 each
Warning Signs	$200.00 each
Mile Markers	$250.00 each

Furniture/Furnishings

Benches	$600.00 each
Trash Receptacles	$400.00 each
Security Bollards	$250.00 each
Bicycle Racks	$500.00 each
Fencing (Board-on-Board)	$20.00 per linear foot
Gates	$750.00 each
911 Emergency Phones	$800.00 each
Restrooms	$40,000.00 each
Landscaping	$25,000.00/mile

Parking Lots	Gravel Lot	Asphalt Lot
10 cars	$7,500.00	$14,000.00 each lot
20 cars	$15,0000.00	$28,000.00 each lot
40 cars	$30,000.00	$56,000.00 each lot

Greenways with Multi-use Unpaved Trail Facility Development (Level 3):

Trail Treads

12-foot Soil-Cement Multi-Purpose Trail	$80,000 per mile
12-foot Aggregate/Stone Trail	$100,000 per mile
12-foot Wood Deck/Boardwalk Trail	$1,800,000 per mile

Signage

Information Signs	$1,000.00 each
Direction Signs	$200.00 each
Warning Signs	$200.00 each
Mile Markers	$250.00 each

Furniture/Furnishings

Benches	$600.00 each
Trash Receptacles	$400.00 each
Security Bollards	$250.00 each
Bicycle Racks	$500.00 each
Fencing (Board-on-Board)	$20.00 per linear foot
Gates	$750.00 each
911 Emergency Phones	$800.00 each
Restrooms	$40,000.00 each
Landscaping	$25,000.00/mile

Parking Lots	Gravel Lot	Asphalt Lot
10 cars	$7,500.00	$14,000.00 each lot
20 cars	$15,0000.00	$28,000.00 each lot
40 cars	$30,000.00	$56,000.00 each lot

Greenways with Multi-use Paved Trail Facility Development (Level 4):

12-foot Asphalt Multi-Purpose Trail	$300,000 per mile
12-foot Concrete Multi-Purpose Trail	$500,000 per mile
12-foot Wood Deck/Boardwalk Trail	$1,800,000 per mile

Signage

Information Signs	$1,000.00 each
Direction Signs	$200.00 each
Warning Signs	$200.00 each
Mile Markers	$250.00 each

Furniture/Furnishings

Benches	$600.00 each
Trash Receptacles	$400.00 each
Security Bollards	$250.00 each
Bicycle Racks	$500.00 each
Fencing (Board-on-Board)	$20.00 per linear foot
Gates	$750.00 each
911 Emergency Phones	$800.00 each
Restrooms	$40,000.00 each
Landscaping	$25,000.00/mile

Parking Lots	Gravel Lot	Asphalt Lot
10 cars	$7,500.00	$14,000.00 each lot
20 cars	$15,0000.00	$28,000.00 each lot
40 cars	$30,000.00	$56,000.00 each lot

On-Road Greenway Facilities (Level 5):

Restriping

Conducted as part of a regularly scheduled roadway resurfacing project and does not include right-of-way acquisition and changes to signal actuation.

Bicycle Lanes	$7,200/mi
Wide Outside Lanes	$6,450/mi

Independent Projects

Listing is for development of facility type. Right-of-way cost estimates are provided as a general guide. Not all projects will require the acquisition of right-of-way. Real estate values fluctuate dramatically and will need to be adjusted on a parcel-by-parcel basis.

Urban Bike Lanes (4' wide, both sides)	$200,000/mi
Rural Bike Lanes (4' wide, both sides)	$110,000/mi
Paved Shoulders (4' wide, both sides)	$110,000/mi
Wide Curb Lane (14' wide, both sides)	$130,000/mi

Other Bicycle Facilities

Class I Bicycle Parking (Bicycle Lockers - per 2 bicycles)	$500-$1500
Class II Bicycle Parking (Secure wheels and frame)	$65-$150/bike
Class III Bicycle Parking (Inverted U's or rail racks)	$65-$80/bike
Bike Route/ "Share the Road" sign	$250/sign

Typical Costs for Pedestrian Facilities

Sidewalks (6' wide, 2 sides)	$100,000/mi
Pedestrian Signal Heads	
(For 2 corners)	$1,800
(For 4 corners)	$3,700
Pedestrian Overpass	$300/sq ft
Crosswalk Striping	$250 each
Curb Extensions	$4,500 each

Facility Maintenance Costs

The following maintenance costs are provided as a guide to establishing a budget for the operation, maintenance and management of each trail segment within the greenway system. These costs are derived from national industry averages and have not been adjusted to reflect unique labor, material and cost issues within Asheville.

It may be possible to lower the cost of maintaining one mile of paved trail through the development of an Adopt-a-Greenway Program. Volunteers have been proven effective in performing some of the routine maintenance activities that are listed below. Savings of 50% of the estimated cost per mile defined below are possible through a coordinated and well run Adopt-a-Greenway Program, and some of these costs are already being covered along highways, roads and parks and other areas.

Typical Maintenance Costs (For a 1-Mile Paved Trail)

Drainage and storm channel maintenance (4 x/year)	$500.00
Sweeping/blowing debris off trail tread (20 x/year)	$1,200.00
Pick-up and removal of trash (20 x/year)	$1,200.00
Weed control and vegetation management (10 x/year)	$1,000.00

Mowing of 3-ft grass safe zone along trail (20 x/year)	$1,200.00
Minor repairs to trail furniture/safety features	$500.00
Maintenance supplies for work crews	$300.00
Equipment fuel and repairs	$600.00
Total Maintenance Costs Per Mile of Paved Trail	$6,500.00
Re-Surfacing of Paved Trail Tread (10 year cycle)	$50,000/mile

Maintenance Trust Fund

Asheville should work to establish a Trust Fund to aid in paying some of the costs for maintenance and management of trail segments. The Fund would be established by soliciting funds from both public and private sector sources. The principal balance of the fund would provide two benefits: 1) the interest generated from the fund would be used to aid in the funding of annual maintenance activities; 2) in the event of expensive short term maintenance needs, the principal balance could be tapped to support these activities. The Trust Fund should be established in association with a local financial management organization.

Community Expenditures on Greenways

In order to provide more cost information, several North Carolina communities that have implemented greenways were queried about their expenditures on greenway development and maintenance. As demonstrated by their responses, community expenditures per mile of greenway can vary greatly, depending on the type of facility developed (paved v. unpaved trails), quality of greenway development, maintenance, amount of existing publicly owned greenway land, and other factors.

- Charlotte/Mecklenburg County have spent a total of $4,175,000 in bond money since 1986 on greenway acquisition and development. In this twelve year period, the money was used to acquire and develop six miles of greenways and to acquire an additional six miles of greenways which have not yet been developed (totalling 2600 acres). Figures for greenway maintenance were not available.

- The Town of Cary spends an average of $6,550 per mile per year to maintain their ten mile greenway system. Since 1986, the Town has spent approximately $905,000 to acquire and develop this system (many properties were donated through their developer dedication requirement--see Funding Sources chapter).

- Winston-Salem has spent approximately $1.5 million worth of bond money on greenway development, and approximately $250,000 on greenway maintenance, since 1987. This has resulted in the development and maintenance of 20 miles of greenway.

• The City of Raleigh currently spends $4,000 per mile to maintain their 40 mile greenway system every year. Since 1985, the City has spent approximately $2.2 million in materials (they use in-house labor) to develop 20 miles of the greenway system.

Proposed Greenways Budget

The City of Asheville should appropriate a certain level of funding each year for the greenway program. This money will function as seed money for greenways, to be leveraged dollar for dollar, by other local, state and federal public and private sector funds. Based on the expenditures of similar communities, it is recommended that the City set aside at least $500,000 per year, depending on the availability of funds, to be used as seed money for greenway development and acquisition. This money may come from a variety of sources, including revenue from a potential bond referendum. When matched with $500,000 of other public and private funds, this $1 million amount will contribute to the development of a minimum of two miles of greenway per year, as recommended in this Plan.

The City will also need to set aside a certain amount of money each year for maintenance of the greenway system. Since maintenance costs are estimated to be $6,500 per mile per year (see previous page), it is recommended that the City budget approximately $13,000 for the first year of the greenway program to maintain the City's existing 2-mile system. Assuming that greenways are developed at a rate of two miles per year, the greenway maintenance budget for the next four years would be: $26,000; $39,000; $52,000; and $65,000. These figures can be reduced through the implementation of an Adopt-a-Greenway program, which would utilize volunteer labor and/or equipment for regular maintenance activities.

Returns on Greenway Investment

Although some of the costs of greenway development in Asheville will be borne by the City, local businesses, and community organizations, investing dollars in greenways will yield a substantial return on a community-wide investment. This return will be in the form of reduced flooding costs, reduced costs of water quality improvement, increased tourism revenue and increased business attraction, among other factors. Although the amount of return cannot be accurately predicted for Asheville' greenway system, examples of how much other communities have realized from greenway development demonstrate such potential.

Flood Damage Prevention:

- The Appalachian Mountains are one of the most flood-prone regions of the planet. Since 1916, there have been 82 flooding events in Asheville, resulting in the loss of 33 lives and over $40.4 million in property damage. Investing in greenways can reduce the social and economic impacts of flooding. By developing greenways as an alternative use of floodplain lands, the costs of future flood damage could be reduced. Direct and indirect costs from flooding include damage to structures and contents, road, sewer, utilities, public emergency response, clean up and repair, lost wages, and lost business operation and revenue.

- The following significant past floods demonstrate losses due to flooding. Future damage caused by flooding could be reduced through greenway development.
  --July, 1916: 11 lives lost; 400 people homeless; 60 homes lost; 25 plants lost or heavily damaged; $500,000 damage to roads and bridges; over $10 million in property loss.
  --August 1928: Major roads and railroad blocked due to mudslides; loss of crops and damage to manufacturing and industrial plants.
  --August 1940: 2 lives lost; loss of property, homes, businesses, crops, roads, bridges, railroad, and sewer.
  --October 1964: Roads closed; $557,400 damage to industry, business, utilities.
  --May 1973: 8 lives lost; 10 bridges washed out; $2 million in private property damage; $1 million in damage to roads and bridges; $8 million in total damage.
  --November 1977: 11 lives lost; 3,600 people homeless; 9,000 people unemployed; $67.3 million in total damages. In Buncombe County alone, there was $16.6 million in private property damage, $1.6 million in private agricultural damage, and $6 million in public property damage.
  --August1994: destroyed roads, farms, homes and businesses, damages at $7.8 million
  --January 1995: 3 lives lost; 70 businesses flooded; $2 million in damage to roads.
  --January 1998: 1 life lost; 23 houses destroyed, 200 houses damaged (an average

repair cost of $2-3,000 to be borne by homeowners), and $5.6 million in Mitchell County alone; at least $11 million in total damage. In the wake of the flooding, area emergency management officials say "it's just a matter of time before it happens again".

Increased Business Revenue:

- Orange County, Florida spent $2 million to create the 16-mile West Orange Greenway, and expects to realize **a complete return** on its investment in the first year of operation through the economic revitalization of the small towns that lie along the trail's route.

- The Northern Central Rail Trail attracts 457,000 visitors every year and has led to the creation and support of 262 jobs in Baltimore County, Maryland. These positions range from trail construction and maintenance work, to jobs in local restaurants and hotels serving trail users, to added positions in regional sporting goods companies and supermarket chains due to increased business. A study found that the trail's cost to the public in 1993 was $191,893 and it generated $303,750 that same year in tax revenue--a result of increased sales, property and income taxes resulting from the Trail.

Increased Property Values:

- The Burke-Gilman Trail in Seattle is used as a selling point for nearby properties and has increased the value of adjacent properties. A study by the Seattle Engineering Department concluded that "property near but not immediately adjacent to the trail is significantly easier to sell and, according to real estate agents, sells for an average of six percent more as a result of its proximity to the trail."

Decreased Transportation Costs:

- According to the Federal Highway Administration, the public saves from 5 to 22 cents for every automobile mile displaced by bicycling or walking. This savings comes from the reduced costs of air pollution (health costs), oil importation, and traffic congestion (such as lost wages and lost time on the job).

- A household can save $3000 a year by giving up one automobile and taking advantage of bicycling, walking and transit.

Decreased Costs of Clean Water:

- Over the next decade, New York City plans to spend $250 million on watershed protection, including the acquisition of greenway lands along riparian corridors, in order to avoid spending $5 billion on a federally mandated water filtration system.

Decreased Health Costs:

- People who exercise regularly, including bicyclists and pedestrians, have 14 percent lower claims against their medical insurance and spend 30 percent fewer days in the hospital (National Park Service, *Economic Impacts of Protecting Rivers, Trails and Greenway Corridors*).

Decreased Criminal Activity:

- Evidence suggests that crime rates frequently drop dramatically when recreation opportunities are improved. To avoid spending $30,000 to keep one teenager in detention for a year, communities are investing money in greenways and other recreation facilities as crime prevention tools. In Philadelphia, burglaries and thefts in an area dropped by 90 percent after police helped neighborhood volunteers clean up vacant lots and plant gardens.